

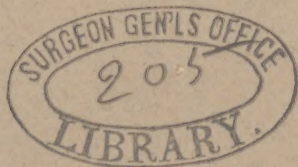
Kinnear (B. O.)

DR. KINNEAR'S COMPLIMENTS.

EXPLANATORY REMARKS  
UPON  
NEURO-DYNAMIC MEDICINE,  
WITH CASES.

BY ✓  
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DR. JOHN CHAPMAN'S SYSTEM OF NEURO-  
DYNAMIC MEDICINE, WITH CASES.

BY B. O. KINNEAR, M. D.

IN the early autumn of 1880, having read the works of Dr. John Chapman, of Paris, and feeling convinced, after the perusal, that the system advanced and advocated deserved trial in a wider sense than I think the profession in this country have hitherto given it, I determined, acting carefully in accordance with his directions, to apply it in my practice whenever opportunity afforded; that is to say, when in any case there was no complication to hinder the *safe* use of heat or cold over the spinal nervous centres.

A careful examination of those points which might prevent, or rather do prevent, the use of one or the other is as strongly urged as the advocacy of the method; thus I would say that a knowledge of when *not* to use the treatment is essential before beginning it. With such information, excellent and speedy results may be obtained in cases in which medicines and other remedies have usually only a temporary effect. Acting carefully, to say that I have been pleased with the sequels to its application in general practice, would be to offer very small praise; I have been astonished and delighted.

To make what follows plain and easily understood, I will give, in a few sentences, a concise explanation of Dr. Chapman's theories, namely, that ice in disease, used properly in rubber bags of the right length and width over the spinal and sympathetic centres, dilates the arterioles controlled by said centres, and arrests, at the same time, hypersecretion from the glandular system, checks spasmodic and irregular muscular move-



ments of voluntary and involuntary muscles; and arrests hypernutrition, by its sedative action upon trophic centres. Heat used likewise acts in exactly an opposite manner.

In respect to Dr. Chapman's theory as to the cause of pain, I refer my readers to his work on Neuralgia, page 23, where a "summary statement of the author's theory" upon this subject may be found. I can state, however, that by the use of ice, in some cases of neuralgia, over the centres controlling the part affected, and in others, by the application of heat, I have relieved the suffering more quickly than by hypodermic injections of morphia, and in *every* case, *as* quickly. During the past eighteen months I have almost left off the use of this drug, to ease pain, finding a more satisfactory agent in heat or cold, used as directed by Dr. Chapman. Beyond the swift relief given to the sufferer the method has another most valuable qualification, namely, that no sickness at the stomach, no prostration, headache, or other disagreeable symptom, follows its proper use; which, we are all very well aware, is not very often the result in the use of opium and its preparations.

In the case of a lady to whom I was called, the patient was agonized from pain over the region of the gall-bladder, with much tenderness upon pressure. Inquiry and the general symptoms eliminated from the diagnosis both inflammation and the passage of gall stones. Ice was applied over the dorso-lumbar region, and in *three minutes* both the pain and *tenderness* disappeared, the sufferer expressing great surprise and pleasure, as despite the use of morphia in her former attacks, she never had been eased for several hours. In the so-called "wind colic," ice gives invariable and rapid relief when applied over the same region of the spine as just mentioned.

The "bilious attack" or "sick headache" is speedily eased by application of ice over the same segments of the spine; the vomiting ceases, and if the head is hot and painful, relief is readily given to these symptoms; comfort and very often sleep rapidly result.

Medicines may now be retained by the stomach to act upon the bowels and relieve the surcharged portal circulation.

In acute diarrhœa it has been swift in its action by checking the discharge from the bowels, as well as the vomiting when there is any, and, in those severe forms where there is great circulatory disturbance, restoring warmth to cold and cramped extremities.

It acts thus at once, according to this theory, in four distinct ways, namely, upon the spasmodic action of voluntary and involuntary muscles, upon the excessive glandular secretion, and upon the "vaso-motor spasm." I give a case to illustrate.

A female patient, about thirty years old, was attacked during the summer of 1881 by violent diarrhœa and vomiting, so severe as to simulate cholera.

All the usual remedies were used for twenty-four hours, except opium, without any abatement of the disease, but rather an increase, a watery stool passing, or an attack of vomiting occurring, every ten minutes. Just previous to the application of the ice to the spine, covering the last four cervical, all the dorsal and lumbar, vertebræ, two severe and prolonged chills were experienced, during which both legs and arms turned of a bluish color, cramped, and became very cold to the touch. The action of the ice was marvelous, because instantaneous. The vomiting and diarrhœa at once ceased. Quickly the extremities became warm, and the patient fell asleep, being awakened every two hours to have the bag refilled, and reapplied. The ice was constantly used from eleven P. M. until five A. M., and upon visiting her next morning about nine A. M., she begged to have it used again at once, saying it was "the most comforting thing she had ever felt." The application was made at intervals during this day and the next; no relapse took place, and not only did the attack remain subdued, but the patient began to regain strength rapidly, much more so than is usual after such an illness.

In the vomiting of pregnancy, carefully used, it promises to be a successful agent. In a single case I found it of great service, enabling the stomach to retain and digest food.

In the mucous vomiting of the so-called "gastritis," it has in one case saved the patient's life by subduing the muscular irritability of the viscus, and checking the mucous discharge, enabling the stomach thereby to retain and digest nourishment, which would have otherwise been impossible, giving also by relief to the straining the much needed physical and mental rest, thus hastening recovery.

In simple leucorrhœa, with deficient and painful menstruation, I have found it of much service, producing a free flow at the period, and stopping the white discharge. Following Dr. Chapman's directions, I have successfully treated constipation with ice over the dorso-lumbar region, caused or rather become chronic from lack of proper blood supply to the muscular coat of the intestine, thus lessening nutrition and peristaltic action sufficiently to prevent the forcing downward of effete materials. In the same manner the leg muscles, or any others, may atrophy and fail to perform their function, which loss, I am convinced, is, in the majority of cases, caused by vaso-motor spasm, or, in other words, by a hyperæmia of the sympathetic ganglia controlling the diseased parts.

In hysteria I have found excellent results from the use of ice, by subduing the hyperæmia of the sympathetic ganglia, and those spinal centres which give rise to the muscular spasm when unduly excited, as in these cases. The patient often quickly becomes quiet, warm, and falls asleep. In jerking of the lower limbs at night it frequently works like a charm when there is nothing to contra-indicate its use.

In sleeplessness, due to excessive use of the brain from almost any cause, ice applied low down (dorso-lumbar region) will produce sleep and give refreshing rest by dilating the arterioles of the lower body, thus

withdrawing from the cerebral circulation its excessive supply, the *cause* of the sleeplessness. When the ice is not sufficient, thus applied, to have the desired effect, a double-columned hot water bag may be used over the sympathetic ganglia of the cilio-spinal region of Chapman, or, in other words, the cervico-dorsal vertebræ, and will assist, by stimulating these ganglia, to a hyperaction, causing thereby a contraction of the blood-vessels of the brain. This, it will be seen, was done in Case I., with an excellent night's rest as sequel.

In one case of asthma treated, very great and I believe permanent benefit has been given to the affection itself, while the general health is better than it has been for a long period. The patient had been a great sufferer for sixteen years, and is sixty years of age. In the cases reported below, that the results there stated could be obtained by electricity, massage, rest, or medicines, or by all of these combined, either in so short a time as reported, or at all, seems to me very doubtful, but whether this hypothesis be right or wrong, they are remarkable as exponents of a great measure of truth in Dr. Chapman's theories practically and carefully applied; and, I trust, may be interesting to the profession.

In conclusion, I would again suggest to those of my medical confrères who may decide to try this method not to do so without a careful attention to those *dangers* with which a careless or ignorant application will very certainly bring them face to face. Upon these *dangers* Dr. Chapman gives very clear and minute directions and cautions.

I have used Dr. Chapman's system in a number of other diseases with benefit to the patients treated, for this article has been written not with the intention of covering all the ground practiced upon, but simply as an exponent of what may be done by this method.

I have made no endeavor to either contrast the neuro-dynamic discovery of Dr. Chapman with the

discoveries of other great neuro-physiologists and pathologists or to demonstrate that by the *results* of his treatment he has discovered much of the physiological nervous action upon blood-vessels, muscles, glands, tissues, etc.; but in a future article I hope to enter upon this subject fully, and will endeavor to show that, by the sequels obtained from the proper application of the method, truthful views of nervous, normal, and abnormal power are manifested.

#### INSOMNIA AND NERVOUS AFFECTIONS.

CASE I. is that of a gentleman from Philadelphia who consulted me in October last, having been recommended to try treatment by Dr. Chapman's method.

The history of the case reads as follows, namely:—

Has been troubled with loss of sleep for many years, at present sleeping from two to three hours per day. Head and arms are hot at night, while the legs, as high as the knees, are so cold as to be absolutely painful; this last is not a constant symptom, being worse some days than others.

The conjunctivæ often become congested during nights that he has no sleep. Has spasmodic jerkings of the lower limbs nearly every night. The digestion is much disordered. Has suffered with a looseness of the bowels for many months, at times amounting to a diarrhœa. Is intensely nervous, and becomes very excited from trivial causes. States that he has had hæmorrhage from lungs; this is doubtful.

Suffers from lack of coördination of the muscles concerned in locomotion, pronounced by a prominent New York physician "locomotor ataxia," and at times has a partial paralysis of both limbs. The right leg drags somewhat when walking.

Is very weak physically, and unable to take much exercise on account of the exhaustion to mind and body which ensues. Upon examination two of the middle dorsal, the last cervical, and all of the lumbar vertebral spines, were found *very* sensitive to pressure, while the whole column was more or less so.

Applied an ice bag from the fifth dorsal to the first sacral vertebra for three quarters of an hour. During its use the sensation was a burning one upon the surface covered, increased to the "feeling of the touch of a hot iron" over the very sensitive spines.

Ten minutes after the bag was removed the patient felt drowsy, and upon lying down slept soundly for an hour and a half. The treatment was continued for five days, when business called him away, but so much relief was experienced that he decided to return in November, to remain as long as was thought necessary.

He returned upon November the 23d, ice being applied on the evening of that day for one hour and a half before going to bed.

November 24th, ten A. M. Patient had a quiet night, but did not sleep much; awoke feeling sick at the stomach, which was at once relieved on application of the ice. One large loose stool after breakfast. The ice was used seven hours through the day to the dorso-lumbar region. One more loose stool after a dinner of soup, fish, and oysters; troubled by flatulence. The muscles of the back upon each side of the spinal column became tender from the long employment of the ice, and the burning sensation during its application continues. In the evening felt tired but not weak; feet comfortable and warm; complains of hot upper extremities, and a feeling of pressure upon the head.

November 25th. Slept between six and seven hours, and awoke refreshed. Ice was used four and one half hours through the day. One loose movement of bowels; felt a tendency to faint during the afternoon. At ten P. M. left the patient comfortable, with the feet quite warm; feeling of pressure upon head remains.

November 26th. Had a quiet night, but slept little, feeling uncomfortable upon waking. Ate a hearty breakfast, however. Ice used four hours during the day. No stool at all; much flatulence and rumbling in bowels. Placed the ice the whole length of the

spinal cord this P. M. from the fourth cervical to the first sacral, which resulted in an attack of vertigo, due, I believe, to an excessive dilatation of the arterioles of the brain from the sedative action upon the already depressed vaso-motor or sympathetic cervical centres. The attack lasted only a few moments, the ice being at once removed from the cilio-dorsal region of Chapman. Left the patient at ten P. M. very comfortable; feet continue warm.

November 27th. Slept several hours, being very quiet when not asleep; woke refreshed; one large, loose stool after breakfast, which did not cause him to feel weak; flatulence continues, but not so troublesome. Ice used over dorso-lumbar region five hours through the day.

November 28th. Had a loose stool after breakfast; slept well. Ice used seven hours through the day. Asserts that he is much stronger than when he arrived.

November 29th. Slept, but passed rather a restless night; two loose stools in the day; ate three good meals, and enjoyed them.

November 30th. Slept well; had some jerking of legs at four A. M.; one stool; less flatulence; feet remain warm all the time.

December 1st. Slept well; head a little dizzy at intervals.

December 2d. Slept well; feels much refreshed; "best feeling day yet;" the first solid stool passed that he has had for many months; patient rather excited over his rapid improvement.

December 3d. Had a quiet night; one small, loose stool, and is depressed in consequence.

December 4th. Slept well until three A. M., when awakened by flatulence and pain in the shoulders; ate heartily through the day, passing another natural stool in the evening; there is no burning sensation upon application of the ice now, nor does any tenderness of the muscles of the back remain; patient likes to have the ice on, and enjoys its use; both legs are much

stronger, and the right, which dragged in walking, no longer does so.

December 5th. One natural stool ; did not sleep so well as usual. Instead of employing ice this evening to the dorso-lumbar region, used a double columned hot water bag, filled with water, at a temperature of about 120° F., over the sympathetic centres in the neck, the object being to produce sleep, by contracting the cerebral capillary circulation.

December 6th. Patient slept soundly through the night (ten hours) and awoke, as he said, "feeling like a new man ;" one natural and one loose stool. Ice used three hours through the day.

December 7th. Slept until three A. M., and was quiet afterward ; ate a good breakfast ; asserts that he "feels much stronger in all respects ;" the general nervous irritability, which has been severe hitherto, grows less daily, while the patient looks like a different man ; evidently gaining in weight. He remained in Boston until the 15th. Improvement as follows : An average of from six to seven hours' sleep every night ; the cessation of the diarrhœa ; a continually increasing appetite, with much improved digestive powers ; a gain of several pounds in weight ; nervous irritability greatly lessened ; perfect recovery of the use of right leg, and a large increase of bodily strength, as was evident by the power shown in taking physical exercise.

December 25th. Has continued to improve, and is doing well, despite working much more, both physically and mentally, than he ought to do or would have been allowed to do under my *direct* care ; the appetite is good, and he obtains a full night's rest about every other night. Ice used two hours in the day.

March 22, 1882. I continue the notes of the case in the patient's own words at this date : —

"I have great pleasure in stating that from the very first day of the ice treatment until this morning I have steadily improved in every respect.

"I have been sleeping from the first of the year an

average of from five to seven hours per night. All the disagreeable nervous symptoms that so much distressed me after any exertion have gone. My lower extremities are as warm as a baby's. My appetite is good, and I can digest almost anything that comes upon the table. I keep up the use of the ice once a day, before going to bed."

The patient was treated exclusively by the ice, as stated above, with the exception of an alkaline mixture given to assist in relieving the acidity of the stomach, and a few calomel powders, of one grain each, administered with the intent to alter the clay-colored stools to a natural hue, in which they succeeded. The *rationale* of treatment after Chapman was that by the constant application of the ice for many *hours* during each day, in the early stage, the hyperæmic nervous centres controlling the nerve *cells* of the intestinal glands might be kept steadily in a state of sedation during the time the patient was up and about, thus preventing a recurrence of the surplus of blood to the spinal centres, and so an immediate recurrence of the diarrhoea. At the same time the arterioles of the lower portions of the body, in a state of contraction almost constant, as shown by the persistent coldness of the legs and feet, with loss of muscular coördination, might be kept dilated by the sedative action of the ice upon the hyperæmic, sympathetic, or vaso-motor centres, thus warming the extremities, and at the same time producing sleep, because withdrawing, by the dilatation of the arterioles in the lower body, the surplus blood in the brain, which in this case seemed to be the cause of the sleeplessness. That hyperæmia of the capillaries of the brain *was* the cause I think is proven by Chapman's method of reasoning from the astonishing result of the first use of the ice over the dorso-lumbar centres, producing sleep immediately, in the daytime, and by the effect of the hot-water bag over the "cilio-spinal" region the night that ice was not used. What the recovery of this case proves in regard to the

truth of Dr. Chapman's theories of spinal and sympathetic control over the glandular system and blood-vessels, seems to be self-evident, and needs no comment. This case had been under treatment in New York and Philadelphia without more than very temporary benefit. To test the method thoroughly the patient was allowed to eat solid food from the outset.

#### NEURALGIA OF THE HIP AND KNEE JOINTS.

CASE II. April 27, 1881, Mr. N. consulted me in regard to his wife, a young woman, who had been suffering steadily for the previous six weeks with no assistance rendered by the usual measures. Upon inquiry found that she has had several previous attacks, the first one following a miscarriage, which took place three years ago. The disease has recurred with increasing frequency latterly, and each successive seizure is of longer duration than the one preceding.

The patient's digestion was much disordered; bowels moved every day; the arms and legs almost constantly cold and damp, so cold as to be disagreeable to the touch; the physical strength much reduced, with fits of mental depression of frequent occurrence.

Sleeplessness was constant, even upon those nights when the pain was not so severe. The heart was irritable, the lungs healthy. Pain upon pressure was experienced over the last cervical, fourth and fifth dorsal, and all of the lumbar, vertebrae. The usual stinging and burning sensation was felt over these regions upon the application of the ice.

The patient has been treated thus far by large doses of morphia, bromide of potash, chloral, and she has sometimes inhaled as much as twenty ounces of ether in a night, to produce sleep and ease pain. All medicines were stopped, and an ice bag applied over the vertebrae, from the fourth cervical to the first sacral, to be so used one hour and a half every night and morning.

May 7th. Sleeplessness greatly relieved, pains not

so violent, nor for so long a period daily. Appetite good, and the digestive powers strengthened. Physical strength much improved, and has taken short walks several times. Arms and legs much warmer. Complains of pain in precordial region and palpitation of the heart. Has very severe pain in calf of right leg. Always cold now, and in pain from early morning, when the suffering begins and lasts until reaction takes place, about three p. m. She then becomes warm, and the pain is eased. Ordered the ice to be used daily two and one half hours upon awaking, one and a half hours in the afternoon, and one hour before going to bed.

May 13th. Strength much improved in every way; depression almost gone; appetite excellent. Has been out some days the whole afternoon without great fatigue. Pain in hip, knee, and calf, only an ache. Hands and feet constantly warm. Sleeps soundly; slight palpitation of the heart remains. Ordered: Tinct. ferri chloridi  $\frac{z}{i}$ , after meals, in water, and tinct. digitalis, minims x., potas. bromid., gr. x., tinct. cinchon. co. minims 20. Take in water before meals.

May 19th. No pain; weight increased; appetite excellent; sleeps profoundly. Patient is convalescent, taking long walks daily. To continue the use of the ice two hours every day for a month.

June 31st. Patient well, having gained fifteen pounds in weight, and feeling just as strong as she ever did.

In this case the sympathetic or vaso-motor and sensory centres were both affected, as shown by the pain and the constantly cold upper and lower extremities.

I did not see the case as often as I wished, or I could have made more minute notes of the daily effect produced by the treatment. The only medicines used were in the prescriptions given above, and they were not prescribed until the patient had advanced far toward convalescence. This lady was told to use the ice one hour per day until the end of August, but

did not do so. Since June last there has been, I believe, one *slight* return of the pain.

#### GREAT PROSTRATION AFTER PROLONGED LABOR.

CASE III. is one of prolonged labor in primapara, otherwise normal, left occipito-anterior position; great prostration after confinement, but no alarming hemorrhage. The child was born January 19, 1881. Up to March 4th following the patient remained prostrated; about holding her own. During this period she suffered with night-sweats, continued constipation, and quite severely from catarrh of the posterior nares. The appetite was excellent throughout this time, but she remained so weak that she would become much fatigued by even standing a few moments upon her feet. Her extremities were cold very frequently. She was treated by doses of laxatives and various laxative foods, to relieve the constipation, — belladonna for the night sweats and a variety of tonics, iron, quinine and strychnia, with no result beyond the most temporary benefit. Ice was applied upon March 4th from the fourth cervical to the last lumbar vertebra for one hour per day. The patient began to improve in general strength after the second application. Within a week she was walking out every day, and upon March 20th came to my office, a distance of three quarters of a mile. She steadily improved, the constipation disappeared, and the nasal catarrh was much relieved.

According to Dr. Chapman's views, the ice acted in this case upon the vaso-motor centres, thereby warming the cold extremities, and supplying at the same time a greater amount of blood to the anæmic muscles of the intestine, stimulating the bowels therefore to normal peristaltic action, and so relieving the constipation. It acted also as a sedative upon the nerve centres controlling the gland cells of the posterior nares, which, by their over action, produced the nasal catarrh; it checked this trouble permanently. The child of this patient was also troubled by the most severe flat-

ulence and constipation. After three weeks spent in useless endeavors to relieve it by the usual remedies, I applied ice to the dorso-lumbar region in a very small bag, with permanent relief to the disease in a few days.

CASE IV. is that of a Boston gentleman who consulted me in December, 1881. He had been troubled with sleeplessness for a long period; very much impaired digestion; nervousness which showed itself by great mental excitability, alternating with delusions and intense depression. The bowels were costive, while the feet and legs were constantly more or less cold and moist. The head was hot, and as the patient expressed it, "felt too full of blood all the time, accompanied by a hissing sensation in the ears."

Ice was applied from the second dorsal to the fifth lumbar vertebra, one and one half hours, twice a day. Improvement was immediate to the sleeplessness; the digestive powers became gradually stronger, and the bowels moved regularly. The lower extremities were soon permanently warm and dry, and the nervous symptoms disappeared to a great degree, although the patient was subject to much mental worry during the treatment. This improvement lasted from January until May, when he had a temporary relapse, which has been overcome, and the strength renewed. His physical strength has much increased under the treatment. He is a man of middle age.

EXPLANATORY REMARKS UPON NEURO-DYNAMIC MEDICINE, WITH CASES.<sup>1</sup>

BY B. O. KINNENAR, M. D.

In speaking this evening upon *Neuro-Dynamic Medicine*, I propose to open my paper by three quotations; two from Dr. Brown-Séquard's, and one from Dr. John Chapman's writings.

Firstly. Dr. Brown-Séquard states: "I consider that the knowledge of the effects of the paralysis and the irritation of the sympathetic nerve opens a new and most important field in physiology, in pathology, and in therapeutics."<sup>2</sup> Again, from his *Researches in Epilepsy*, referring to the paleness of the face in that disease, he says: "We consider it a most interesting symptom, as it leads to a very probable explanation of the loss of consciousness in epilepsy. After Prof. Claude Bernard had discovered that the section of the 'cervical sympathetic nerve' is followed by a dilatation of the blood vessels of the face, I found that when this nerve is irritated by galvanism there is a contraction of these blood-vessels, and I explained the facts discovered by the eminent French physiologist and myself, by considering the sympathetic as the motor nerve of the blood-vessels of the face. When the excitation takes place in the spinal cord, and the basis of the encephalon, which gives rise to the fit, the nerve fibres which go to the head are irritated and produce a contraction of its blood-vessels. Of course this contraction expels the blood and the face becomes pale. . . . We think that at nearly the same time when the origin of the branches of the sympathetic nerve going to the blood-vessels of the face receive an irritation in the begin-

<sup>1</sup> Read before the Section for Clinical Medicine, Pathology, and Hygiene of the Suffolk District Medical Society, February 14, 1883.

<sup>2</sup> *Lectures on the Physiology and Pathology of the Central Nervous System*, page 140.

ning of a fit of epilepsy, the origin of the branches of the same and other nerves going to the blood-vessels of the brain proper also receive an irritation. A contraction then occurs in these blood-vessels, and particularly in the small arteries. This contraction expelling the blood, the brain loses at once its functions just as it does in complete syncope."

The quotation from Dr. Chapman's writings runs as follows, namely:—

"It has long been known that the sympathetic nerve, called by Bichat the nervous system of organic life, presides over those processes by which the body is developed and sustained. It stimulates and controls the action of the heart, alimentary canal, genito-urinary organs, and all those processes of growth, repair, and removal of effete materials on which the continuous vitality and health of the animal organism depend. During recent years important additions to our knowledge of the functions of the sympathetic nerve have been made, chiefly by Prof. Claude Bernard, Dr. Brown-Séquard, and Dr. Augustus Waller, with reference to its power of controlling the action of blood-vessels or what have been termed its vaso-motor functions.

But as the sympathetic and cerebro-spinal nervous systems are intimately related, and indeed in some parts inextricably and indistinguishably blended both in structure and function, the nervous influence, whether healthy or not, which is exerted over the several organs of the body is twofold; hence, when that influence becomes abnormal, either in kind or degree, the most potent method of restoring it to its healthy condition would be by a dual action at once on the sympathetic and cerebro-spinal nervous systems. The physician who acquires the power of directly controlling these great controllers of the organic functions would immediately obtain the mastery over a large number of diseases." Dr. Chapman claims, and I believe truly, to have discovered this controlling power by the application of heat or cold over the vaso-motor and spinal nervous centres.

The above experiments prove what I think is now the widely accepted belief: that the sympathetic ganglia control arteriole expansion and contraction, which, more clearly rendered, is to state that when irritated or hyperactively working these ganglia contract the blood-vessels under their control abnormally: when they act less forcibly than the normal standard requires, the vessels acted upon dilate abnormally, either in active or passive congestion.

Dr. Chapman believes that the contraction of arterioles is caused by hyperæmia, and expansion by anæmia of these ganglia; that undue nerve force is created by increased circulation in the arterioles of central nervous ganglia, and lessened nerve force by a lack of normal circulation in the same. He gives a confirmation of the effect of cutting the cervical sympathetic nerve in Case XLIII., page 411, "*Work on Neuralgia*," there stating that the ice, when first applied over the cilio-spinal, or cervico dorsal region, gave rise to a "throbbing headache and flushed face." I can further corroborate this result in my own case, having used the ice upon the same region to subdue a constant though not severe posterior nasal catarrh, with which I had been troubled for several years. I always used it one hour to one hour and a half after breakfast. Toward the end of this time I invariably experienced a sensation of brain exhilaration, like that produced by champagne, minus any intoxicating effect; while my face showed a ruddy color, similar to that produced by walking briskly in stimulating cool air. A case of very severe posterior nasal catarrh now under treatment experiences the same "brain exhilaration" after the application of the ice, but has no flushing of the face apparent, being a man naturally pale, and past the usual age of fresh complexion.

That contraction of arterioles is caused by hyperæmia of the sympathetic or vaso motor ganglia is believed to be true by Dr. Chapman, for the following reasons: "To make this clear I must refer to the state of the

brain when asleep. The brain during sleep receives less blood than during the waking hours." Upon page 171, *Work on Neuralgia*, Dr. Chapman makes the above statement, and then relates a case by Blumenbach of a patient whose skull had been trepanned, and whose brain was observed to sink whenever he slept, and to swell again with blood the moment he awoke. The case is reported in an *Essay on Sleep and its Phenomena*, by J. M. Pinkerton, M. D., London, 1839, page 8. The same fact was demonstrated by Dr. Durham in his vivisectional experiments.<sup>1</sup>

I will now read a few extracts from a very able article upon "Sleeplessness, its Causes and Treatment," published in the *Birmingham Medical Review*, for April, 1882, written by W. E. Green, M. D., of Sandown, Isle of Wight, England.

He says: "From the experiments of various observers it now seems placed beyond all doubt, that sleep is a condition of physiological cerebral anæmia. Many physiologists have taught that a dilated condition of blood-vessels was the cause of sleep," and adds, "that this mistake may have arisen from the intense turgescence of blood-vessels after death from opium poisoning, forgetting that the state preceding death was coma, and not normal sleep." Further, "that Hammond, Durham, Donders, and Pilager admit the brain to be anæmic during sleep, the latter observer endeavoring to explain the phenomenon by a chemical hypothesis. Fothergill also believes this, and states there are two factors causing the anæmia of the brain while sleeping, namely, the modified blood supply, and the lessened activity of the cerebral cells themselves."

Dr. Chapman says: "I have verified the truth of this discovery hundreds of times by decreasing the amount of blood in the brain." How? I will presently explain. He further states, what we all know, that "during sleep, respiration, oxygenation, and circulation are diminished; the amount of carbonic acid ex

<sup>1</sup> See the Guy's Hospital Reports, etc.

pired is consequently lessened, and the temperature of the body falls to an appreciable degree."

The conclusion drawn is this: "The diminution of the amount of blood in the brain and in the surface of the body, and the diminution of the functions of respiration, and therefore of oxygenation and circulation of the blood, are evidence of, and indeed, are produced by an increase in the nutrition and functional energy of the sympathetic or vaso-motor ganglia," thus meaning, although he does not say so, in this quotation, a hyperemia of the same. The following sentence I place in the interrogative form, namely: The blood at night, leaving the brain and surface of the body, *must* go to internal organs, including nervous centres, which thus, during sleep, receive nutrition, and so a fresh supply of nervous energy for the following day's work?

To answer how Dr. Chapman has reduced the quantity of blood in the human brain? By covering with water, at a temperature from 115° to 120° F., the sympathetic ganglia of the cervico-dorsal region. Why is this effect produced? According to "neuro-dynamic medicine" heat thus applied stimulates to *hyperaction* the vaso-motor ganglia, by causing the blood to flow in greater quantity through these centres, thus producing a contraction of the capillary arterial system under their control. Dr. Chapman has demonstrated this in hundreds of cases. I have done so in many. To illustrate:—

CASE I. Mr. B. A case of supra, and suborbital neuralgia of the left side of the face, quite extensive swelling of the left cheek, with much heat; throbbing of the temporal arteries upon both sides; face flushed and hot upon right side also. During eight hours after I first saw him two grains of morphia were administered without the slightest relief to the pain, but rather a steady increase of it, for two hours, *after* the last dose of the drug had been taken. At the end of this period he asked me if I could not in some way relieve him soon, as the suffering was "unbearable." I filled a lumbar

ice-bag of Dr. Chapman's half full of hot water and applied it over the cilio-spinal region. In fifteen minutes the pain was relieved, the throbbing ceased in the temporal arteries in thirty minutes, and the patient slept for four hours, waking with slight pain in face and some headache; but the swelling of the left cheek already much reduced.

A second application gave him rest for the night.

Before the heat was used the second time he was given a dose of calomel and bismuth, as he had been "living high," and the attack was doubtless produced by indigestion.

In a second case of neuralgia of the occipital and temporal regions of the head, with the same arterial throbbing conditions, the hot water, similarly applied, at once relieved the pain and produced sleep. In several cases of insomnia, with hot head, and without it, I have used hot water over the cervico-dorsal region with the one invariable result, the production of sleep.

If heat so applied does not cause the sympathetic ganglia to become hyperæmic, thus act more forcibly, and so contract the arterioles of the brain, how then can it act, applied over this region, and only so, to give rise to contraction of these blood-vessels? They certainly do contract in cases like those quoted.

If not caused by congestion of the centres controlling the arterioles, what is the reason for such action?

Is there a further explanation or a more reasonable one?

To enter a little more deeply into this interesting inquiry, I refer to a case published by me in the *Boston Medical and Surgical Journal* for August 10, 1882. It was that of a child three weeks old, who for this period of existence had seldom ceased to cry, suffering constantly with flatulence and constipation. The infant slept little, and its feet were cool; that is, not naturally warm. During these weeks I used all available medical means in the way of laxatives and purgatives, with but very temporary benefit. I then used

ice in a very small bag, over the baby's dorso-lumbar region, the nurse holding it in place until the ice melted. The baby stopped crying during the first application, appearing comforted. The feet soon became warm, and in ten days the bowels were acting freely and regularly.

Here the sympathetic centres were over-acting; thus the circulation of the blood through the contractile elastic or muscular coats of the intestine was feeble; also through the legs, as shown by the cool feet. The ice acted by causing a general dilatation of the arterioles controlled by the centres over which it was placed, the muscular or elastic coat of the bowel was nourished, and peristaltic action, which had been *nil*, ensued, the constipation being cured as the result. The baby is now two years old, and the disease has never recurred. It was a very curious fact that when I first used the ice in this case the temperature of the back, over and near to the dorso-lumbar region, was *very distinctly higher* than over the spine above or below this region. I remarked upon it at the time, to the nurse, not then realizing its importance.

Was this in an infant a proof of congestion of the sympathetic centres? It seemed so to me, for at birth, the three centres of ossification of the vertebrae are not united, and the spinous and transverse processes are really rudimentary; therefore between the surface of the back and the spinal cord and sympathetic ganglia there would be but a few lines distance, so that the heat produced by an active congestion of these centres might very well be felt directly above them. I state this fact as an interesting one, and put the conclusion to be drawn from it in the form of a question.

*Taking heed to dangers* which may spring from a wrongful application of cold to the spine, by errors in diagnosis, or carelessness in searching for contra-indications to its use, I have proven in a number of cases that ice applied over the proper regions will warm cold

extremities as well as restore to full power paralyzed legs, which paralysis has been due to congestion of vaso motor centres, with improper nutrition of muscles and the *motor nerve centres* controlling them; as a consequence, giving rise to paralysis of the part. I refer to Case I. reported in the Boston Medical and Surgical Journal for August 10, 1882. This patient had a partial paralysis of the right leg, which was restored to normal action in three weeks, the result being permanent, the leg having been paralyzed for a year previous to treatment.

CASE II. is that of a hackman, who came to me October 12, 1881. He had been upon a tremendous spree, which lasted a week. Then he was seized with numbness in the right arm and leg, which frightened him so much that he at once stopped drinking. During the few days following, the arm became better, but the leg grew very cold to both sensation and touch, with almost entire loss of muscular power. He was able to stand upon it, but the flexors of the thigh were quite useless, and he had to drag it after him. Both leg and thigh were so cold as to feel like that of a corpse, showing a strong contraction of arterioles throughout. I told him to return home and soak the diseased extremity in very hot water four or five times a day, for half an hour at a time. He returned next morning saying that the parts remained warm for a few minutes after each hot bathing, but soon became as cold as ever. I then applied the dorso-lumbar ice-bag for two hours, and told him to use the ice over the dorso-lumbar region eight hours each day. Two days afterward he walked into my office with a warm limb, and power already much restored in the previously paralyzed muscles. Ice was used as before for the next ten days, from six to eight hours per day, when the patient was able to renew his vocation, finding no difficulty now in mounting to his seat on the hack, or in exercise of the leg in any other way. Ice was continued twice a day until the middle of Decem-

ber. It has not again been applied, and the patient has remained well to this day, able to fulfill all his duties.

This is a remarkable instance of the sedative action of ice over hyperacting vaso-motor centres, restoring anæmic circulation to its normal condition, and overcoming the motor and sensory paralysis caused thereby.

CASE III. furnishes another noticeable illustration of restored circulation by spinal ice application.

I. S., a mechanic, working in a piano factory in Cambridgeport, Mass., consulted me in March, 1882, suffering with chronically cold arms, legs, and body. There was constipation and feeble digestion, and constantly increasing vertigo, unfitting him for work. In the hottest summer nights he said that he had to cover himself with seven or eight blankets to keep warm and obtain sleep. Ice was applied from the fourth cervical to the last lumbar vertebra during four hours each day. He returned in a week, stating that he now slept quite comfortably under one blanket; his appetite was improved, and his head entirely relieved from dizziness; the bowels were moving regularly. Improvement steadily advanced, and the man has had no further trouble. "I saw him in November last, when he informed me that he was "quite well," with constantly warm hands, feet, and surface of body; no head trouble, and in every way healthier and stronger.

These cases illustrate, according to neuro-dynamic medicine, a hyperæmia of vaso-motor or sympathetic centres, as also in the case of the baby referred to.

Having become more and more convinced of the power of this system as a truly scientific medical remedy, I have at the same time realized the *danger*, through the very power of the treatment, of its application in cases which *contra-indicate* its use, so that in those patients upon whom it is used for severe, acute, or chronic troubles a *very* careful diagnosis should be

made, as well as a searching inquiry into the history of the patient's former illnesses. To illustrate this caution, and demonstrate again the power of ice to produce vaso-motor paralysis, and heat vaso-motor contraction, I will close my paper by relating the history of another case.

The patient, a young man, had suffered severely for several years from spermatorrhœa. He was very anæmic and nervous. In six months' time the disease was much relieved, and the general physical condition greatly improved. He now caught a succession of severe colds, affecting the bronchial tubes. Each acute attack of the bronchitis was treated by heat between the scapulæ, with relief to the congestion of the bronchial arterioles (showing contraction thereof) in a very short time, and a free flow of mucus, which was easily expectorated. Since these attacks the patient has been unable to use ice above the lumbar region for the original trouble, because if placed over the last four or five dorsal vertebræ he soon begins to breathe hard, and experiences a sense of suffocation and weight in the inferior lobes of both lungs. I have little doubt that asphyxia would be produced if the ice were used over his dorsal region for any length of time, from the vaso-motor paralysis induced.



